

# Information system on occupation services and e-Commerce market for elderly

<sup>1</sup>Suawanee Ruangchaisri, <sup>2</sup>Prapai Sridama, <sup>3</sup>Auemporn Dhienhirun, <sup>4</sup>Poramest Boonsri

<sup>1,2,3,4</sup> Department of Technology Management,

<sup>1,2,3,4</sup> Bansomdejchaopraya Rajabhat University, Bangkok, Thailand.

**Abstract :** The objective of this research are to study needs for information systems in professional services and e-commerce marketing for older persons of the employment office in Phichit province, to design and to build information system for professional services and e-commerce marketing of the employment office in Phichit province, and to study the satisfaction of users of information system, professional services and electronic commerce marketing of the employment office in Phichit province. The sample consist of 44 persons, including one person of Phichit provincial employment office manager is one persons, two persons of the head of the employment office of Phichit province, six employees of Phichit provincial employment office, thirty elderly people from 12 districts of Phichit province, and five entrepreneurs involved in the distribution of the elderly by selected from the sample with specific approach. An application online is developed in this research for forecasting about career service requirements of elderly persons of Phichit province. The decision support system is used to decide about career selecting. Both rule base and decision tree are used to arrange careers that suits the age and ability of the elderly to come. In addition, the search for the most suitable profession is obtained by searching with the heuristic search. The research finds that the study needs of information system for occupational service and marketing of e-commerce of the elderly in Phichit province that the results of the study are as follows:1) type or occupations groups that need to receive 11 services are in high demand (the average value is 4.04) and the most wanted profession are health promotion, herbal medicine, herbal product and herbal products and packaging, 2) the demand for vocational training was at the high level of 12 districts (the average value is 3.66) and Phichit district has the demand for vocational training first, and 3) the demand for e-commerce marketing services is very high (the average value is 4.28). In addition, after the training programs are presented with the decision support system from 30 participants. It appeared that there are participants in various topics. A total of 27 people, representing 90 percent.

**IndexTerms - Information system, occupation service, e-Market, decision support system.**

## I. INTRODUCTION

General assembly of the world elderly in Vienna Austria in 1982 given the definition the elderly as a person aged 60 years and over. The elderly for Thailand are people aged 60 years and over. UN secretary-General Ban Ki-moon said that the elderly are an enormous asset to society and play an important role in international development. Driving the sustainable development agenda in 2030 must take into account changes in population structure over the next 15 years. Therefore, it directly affects achieving sustainable development goals. Study of guidelines for the elderly and elderly workers in 4 countries, namely Japan, the United States of America, England and Singapore, which are the models of the elderly development. The first, Japan is the country with the highest proportion of the elderly population in the world and has taken seriously the aging problem. However, Japan has issued a law to promote employment in the middle age and the elderly and has improved many times until changing to the law on security in the employment of the elderly [1]. The United States attaches importance to the prohibition and discrimination of age regarding employment, with legislation prohibiting discrimination in the age of employment. In addition, the United States has established a senior service employment program in the community to work in a government agency or non-profit organization. The government of England has enacted employment laws covering the rights of older workers.

The phenomenon of the elderly does not occur in Thailand alone, but in many countries around the world. In addition, Thailand has a high proportion of elderly compared to the total population of the country, ranking at 2 out of 10 ASEAN member countries at present. And in the year 2040, Thailand will has the highest proportion of elderly population in ASEAN too. Bank of Thailand reveals results of study indicating that Thailand enters an aging society faster than other countries without preparing to cope. While the majority of the elderly in Thailand are poor cannot be self-reliant. Thai elderly with high education is only 12 percent of the elderly in general and is considered much less than other countries. As a result, Thai workers tend to have to rely more on government and family. Thailand is facing this problem at a faster rate than Japan and Singapore but still not aware of the challenge this problem in the future. However, the study found that the employment rate in Thailand has continuously decreased since 2013 with an average contraction of 0.04% per year. The decreasing group is mainly the labor age group. Thai women are considered a large group out of the labor market quite quickly. This group of workers began to stop working to earn money from the age of 45 because the lack of skills. In addition, most Thai seniors still want to work but have a lot of primary and lower education, And a certain number are in the agricultural sector, with relatively low average monthly incomes. In this regard, if considered at the provincial level of Thailand, it was found that Phichit has a large number of elderly people and needs development to generate income [2]. According to a survey conducted by the Phichit Provincial Employment Office regarding the elderly's work needs in the fiscal year 2018, it is found that the number of elderly aged 60-80 years who want to work is up to 1,432 people out of a total of 2,670 people.

However, even though the agencies for vocational development for the elderly are established in each region, most of them lack the database of various fields for the sake of planning. In addition, the elderly database will enable strategic planning, providing vocational training services to suit each target group. The researchers found that when vocational training is conducted, the elderly from the employment office which provided vocational training services via information system will help increase productivity and customer service. However, once the product is produced, the electronic commerce channel should be used to help for distribution and service customers faster.

The researchers are interested in conducting research on professional service information system and marketing for e-commerce for the elderly which is the development of information system using SDLC and prototype for the Phichit Provincial Employment Office. This system uses the decision support system for solving problems related to selecting training topics suitable for each elderly. In addition, the employment office will have an information system that provides electronic commerce marketing services linked to productivity of the elderly to have distribution channels and increase income.

## II. THEORIES AND RELATED RESEARCHES

Conducting research on information systems for vocational services and electronic commerce for the elderly. The researchers have studied and researched from related documents which will be presented in the following order.

### 2.1 Preparation for Becoming a Quality Thai Elderly

Increasing the efficiency of the National plan for older persons no. 2 and no. 3 (2022-2041), which is supported for another 30 years, with an emphasis on ensuring income for the elderly. However, it is not enough to sustain the elderly each month. Therefore, there should be preparation for saving since working age to be a sustainable source of income in the elderly [3]. In addition, there are efforts of many parties to carry out various tasks. In order to promote and develop the elderly, the key are 1) establishing a database for the elderly to use for planning and proposing projects that are consistent with the facts, 2) dividing the elderly to plan strategies that support each group, 3) promoting the elderly a new ear that tends to be more alone by using information technology through mobile phones, computers, and internet access, and 4) developing professional careers for adults according to their potential or interests.

### 2.2 Decision Support System

Decision support system (DSS) is a technique to help the decision maker to synthesize the information for the best decision by using computer or electronic communication tools as a tool to gathering information for making the decision in problem solving and be able to make decision on the complicate matters to get the best solution. The decision support system has evolution from two main studies which are "The study of the hypothesis for organization decision" at Carnegi Institute of Technology during 1950 to 1960 and "The study of techniques using for work" in 1960 [4]. This beginning points lead to the construction and development of many application programs. The format of DSS will be filling with reliable information into the database. The information system of other enterprises that relates to decision will compose of models for decision making, process of analysis on the present working condition by experience expert, decision by rule-based, and communication system in term of "what if" analysis. However, what have been received from the system will help to classify the choices of selection by deleting the unsuitable choices of selection.

### 2.3 Heuristic

The heuristic is a model for complicate problem solving [5]. The complicate problems are those without construction and semi-construction that have inconsistency of variables. Actually, the Heuristic problem solving is a problem solving by using simple rules that occur from previous experiences of the same problem solving. The idea of Heuristic will be dealing with searching, learning, and considering on decision. After that, there will be the repletion of the process again. The examples of heuristic problem solving are unreliable input data, limited input data, complicate conditional problem, and more symbolic processing than numeric processing.

### 2.4 System Development with the System Development Life Cycle (SDLC)

System Development Life Cycle methodology consists of 7 steps as follows: The first, project identification and selection step, The second, project initiating and planning system development step, the third, system analysis step, the fourth, logical design step, the next, physical design step, the sixth, system implementation step, and last, the system maintenance step.

### 2.5 Related Researches

A research of Eunhee Cho has result about the quality of life of the elderly [6]. He found that improving the quality of life of the elderly was necessary, having a program designed for the characteristics of the elderly, and creating suitable jobs for the elderly. Henriikka Joensuu collects the data of quality of life of the elderly at Swaland. This research found that more than 50 percent of the simple is satisfied with social relations [7]. Kanokwan and et, al.'s studied of factors that influence the development of intention to use electronic market for small and medium-sized businesses in the three southern border provinces. The analyzed factors were used to examine relationships and create forecasting model using multiple linear regression methods [1]. This research could give the e-market's knowledge for skill increasing about using tools.

### III. RESEARCHED METHODOLOGY

This research is research and development by developing SDLC information system and prototype system for professional services and marketing of e-commerce for the elderly of the Phichit Provincial Employment Office, which has the following research procedures.

The sample in this research consisted of expert group and information system user group. The expert groups can divide three groups as follows: 1) the five experts in assessing the consistency of the interview form, 2) the five experts in evaluating questionnaires for accepting information models, and 3) the five experts in evaluating system satisfaction questionnaires. In addition, the information system user group has 44 people.

The research instruments consisted of 1) the information system on vocational training and electronic marketing for the elderly in Phichit Employment Office, 2) the job demand survey, 3) interview form, 4) the acceptance form for the information system in professional services and e-commerce marketing for the elderly, and 5) the satisfaction of users of information system.

#### 3.1 Building and Finding Quality Tools

System Development Life Cycle methodology consists of 7 steps as follows: The first, project identification and selection step, The second

##### 3.1.1 Creating Interview Forms

Interviews with the needs of the information necessary for the use of information systems in professional services and the e-commerce market for the elderly. The interview forms consisted of 1) the demand for professional training services, 2) the demand for vocational training services, and 3) the demand for e-commerce marketing. In addition, there are 1) the interview form and the measurement form were in the form of a rating scale with 5 levels, 2) the interview and the test were taken to 5 experts to examine the validity and then tested with 30 samples, 3) calculation the coefficient of correlation to be 0.82 or more, and 4) bring the interview form to the experts to evaluate the conformity index.

##### 3.1.2 Information System for Professional Services and Marketing of Electronic Commerce for the Elderly of Phichit Provincial Employment Office

In this regard, the following actions have been procedures. 1) the development of information systems for vocational services and the e-commerce market for the elderly of Phichit Provincial Employment Office by SDLC mixed with prototype model. In addition, this system has the decision support system to forecast training topics for the elderly that the heuristic and decision tree techniques are used to forecast too. 2) the information system in professional services and electronic commerce marketing for the elderly of Phichit Provincial Employment Office has been designed to check the accuracy and suitability. 3) to create an evaluation form for accepting information systems for vocational services and e-commerce marketing for the elderly. 4) estimated reliability of the acceptance assessment form for information systems in vocational services and e-commerce marketing for the elderly of the employment office of Phichit province by testing it with people involved in the system and not in the samples.

##### 3.1.3 To Find the Confidence Value of th Information System Acceptance Assessment Form

This procedure has many steps that has the following: 1) to create a satisfaction assessment form for information system users, 2) the satisfaction assessment form for the information system users, and 3) to bring the satisfaction evaluation form to a computer or information technology experts to check the suitability of the questions.

#### 3.2 To Collect Data

The basic data collection area for clients in vocational training and marketing is Phichit Provincial Employment Office. Basic information of the service recipients in vocational training and research marketing are seniors aged 60 years and over from 12 district of Phichit province.

#### 3.3 Statistics Used in the Research

There are many Statistics for analyzing with quality of tools in this research.

##### 3.3.1 The statistics used for evaluating the consistency index is Index Of Consistency (IOC)

The IOC is to give scores by answering the content assessment form from experts. The levels of assessment has three levels. +1 is sure. 0 is unsure if appropriate. -1 is should improve. If values of IOC is lease than 0.5 then the variables of information are inappropriate. This equation can be shown at below.

$$IOC = \frac{\sum R}{N} \quad (1)$$

Set  $IOC$  is consistency between content and question points.

$\sum R$  is summarize of scores from all experts.

$N$  is the number of experts.

### 3.3.2 Statistics for calculating average values

This research uses equation 2 for finding average values.

$$\bar{x} = \frac{\sum x}{n} \quad (2)$$

Set  $\bar{x}$  is the average value.

$\sum x$  is summarize values of the respondents.

$n$  is the number of the samples.

### 3.3.3 Statistics for finding the standard deviation

The standard deviation equation can be shown at the equation 3.

$$S.D. = \sqrt{\frac{n \sum x^2 - (\sum x)^2}{n(n-1)}} \quad (3)$$

Set  $S.D.$  is the standard deviation value.

$\sum x$  is the summarize values of the respondents.

$n$  is the number of the samples.

### 3.3.4 Statistics used in the analysis of confidence values

This research uses the Cronbach's alpha coefficient for the analysis of confidence values. It is shown at equation 4.

$$\alpha = \frac{k}{k-1} \left\{ 1 - \frac{\sum S_i^2}{S_t^2} \right\} \quad (4)$$

Set  $\alpha$  is the Cronbach's alpha coefficient value.

$k$  is the number of questions.

$S_i^2$  is the variance of the scores for each item.

## IV. EXPERIMENTAL RESULTS

The results of data analysis of information system in professional services and electronic commerce markets can be explained by the text below.

### 4.1 Information System Requirements

Demand for vocational training and e-commerce marketing services for the elderly of the Phichit Employment Office classified by occupation type can be shown in table 4.1.

Table 4.1: Demand for Professional Training Services and Electronic Commerce Marketing

Demand for Professional Training Services and Electronic Commerce Marketing	$\bar{x}$	$S.D.$	Meaning	Rating
To make a doormat with colorful rings	3.29	0.76	Very	5
Making hugging pillows and cushions	3.62	0.78	Very	8
To make a broom grass	3.49	0.69	Moderate	10
Products from plastic threads	3.65	0.80	Very	7
Herb products and packaging	4.61	0.84	The most	4
Making herbal products	4.69	0.72	The most	3
Organic herbs for health	4.70	0.61	The most	2
Sweets, craftwork and organic agriculture	3.61	0.76	Very	9
Career promotion with herbs	4.80	0.83	The most	1
Stretcher tied from leather	3.72	0.74	Very	6
Making a wreath and wreath	3.62	0.98	Very	8

The table 4.1 presents about the demand for professional training services and electronic commerce marketing. The highest rating is the career promotion with herbs. The second is organic herbs for health and the third is the making herbal products.

After to create the information system on occupation services and e-Commerce market for elderly, the 30 samples test this system. However, we show some results from this research that related with the decision support system for forecasting of training needs. From this test found that the DSS can give a choice of training topics to meet the needs of up to 27 people out of 30 people.

In addition, this research survey the satisfaction with this system that it can be shown in table 4.2.

Table 4.2: Satisfaction with professional services and electronic commerce marketing

Satisfaction with professional services and electronic commerce marketing	$\bar{x}$	<i>S.D.</i>	Meaning
In designing the data import section	3.37	0.69	Moderate
The response to the needs of users	4.11	0.78	Very
The results from the system	3.74	0.95	Very
Integrity of information in each area	4.08	0.79	Very
Benefits of uses	3.98	0.78	Very
Information security	3.25	0.76	The most

Table 4.2 shows the satisfaction in professional services and marketing of e-commerce for the elderly of Phichit Provincial Employment Office. The total average of satisfaction is 3.76.

## V. CONCLUSIONS

The results of the analysis of the demand for information system for vocational services and marketing of the Phichit Employment Office in terms of demand for vocational training services and electronic commerce for the elderly found that the needs of service providers/vocational groups in vocational training of the elderly were at a high level. In each profession, there is a high level of demand and ranked 1 through 4 at the highest level. 1) career promotion with herbs, 2) organic herbs for health, 3) herbal product making and 4) herbal products and packaging. In addition, the 30 samples test the information system on occupation services and e-Commerce market for elderly. From this test found that the DSS can give a choice of training topics to meet the needs of up to 27 people out of 30 people.

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